

11-05090-06
May 25, 2018

Mr. Eric Joosten, Chairman
Environmental Protection Commission
Town of Darien
2 Renshaw Road
Darien, CT 06820

Re: **Baywater Properties, Corbin Block Development
Environmental Assessment**

Dear Commissioners:

This letter report presents a wetland delineation conducted for the subject project and describes the existing environmental conditions including a review of the functions and values of the existing site watercourse. This report is made as part of an application to your Commission to conduct a regulated activity at this site and includes a discussion of proposed impacts, mitigation and alternatives assessed during the development of the proposed project.

Watercourse Delineation

On January 13, 2018 Tighe & Bond soil scientist and wetland scientist Richard Canavan delineated a watercourse at the project site north of Corbin Drive in Darien. This watercourse flows on to the site through a culvert, discharging into an open channel for approximately 360 linear feet before flowing into a downstream culvert under Old Kings Highway South. The flow in the discharge culvert is generally southeasterly, toward Goodwives River. Although the open segment of watercourse has been highly altered, it meets the regulatory definition of a watercourse with a defined bank, scour and alluvium deposits, flows outside of a rain event, and hydrophytic vegetation. No other on-site wetlands or watercourse were identified.

The entire northeastern bank of the channel is armored with slope concrete or stone revetment. Stormwater outfalls from the existing development flow directly into the channel. Beyond the armored bank is paved parking, driveway and a dumpster enclosure. The southwestern bank of the channel is stabilized with stone armoring and a timber retaining walls, and include fencing. A portion of the channel is adjacent to a parking lot where an approximately 5-foot wide area of natural vegetation is present. Trees observed in this area included red maple (*Acer rubrum*), linden (*Tilia* sp.) and black locust (*Robinia pseudoacacia*) and shrubs included burning bush (*Euonymus alatus*), rose (*Rosa multiflora*), sweet pepperbush (*Clethra alnifolia*) and red-osier dogwood (*Cornus sericea*). An unidentified aquatic plant was growing in the watercourse near the upstream end of the open channel, possibly watercress (*Rorippa* sp.). Finally, a building is within 5 feet of the channel at southwestern portion of the channel where vegetation between the building and channel is managed to remove trees and shrubs. Direct discharge pipes outlet from the building into the watercourse.

As previously mentioned, the on-site watercourse discharges to the Goodwives River after flowing out of the culvert under Old Kings Highway South. At the Old Kings Highway South outlet, the downstream banks of the Goodwives River are stone-armored as the river approaches Interstate-95. In this area, the northerly banks of the Goodwives River are wooded. The delineation did not include the Goodwives River. The jurisdictional limit of the Goodwives River watercourse is abrupt and can be approximated by the river's ordinary high water line to determine the limits of upland review area at the site.



In addition to the narrative description of the watercourse representative photos of the on-site watercourse taken during the delineation are attached to this letter.

Functions & Values

The wetland function and values of the on-site watercourse are limited by the following:

- Lack of connectivity to adjacent wetlands, watercourses or undeveloped uplands
- Lack of storage, short residence time of water in the watercourse
- Armored banks, limited water exchange with surrounding land

The US Army Corps of Engineers' Highway Methodology includes thirteen functions and values that wetlands may provide. The following discussion groups several of these functions and values based on the controlling site conditions.

The watercourse may provide groundwater recharge and discharge functions. The surrounding groundwater level is likely suppressed due to the extent of impervious cover near the channel. The presence of rock along some parts of the channel bed, in addition to the hardened bank armoring acts to limit exchange between flows in the channel and groundwater.

The functions of flood flow alteration, sediment/toxicant retention, and nutrient removal or retention all are very limited in the on-site watercourse. The straight path of the watercourse through hard-armored banks provides little residence time for flow or sediment before discharging into the downstream culvert beneath Old Kings Highway South.

Fish and shellfish habitat, wildlife habitat and endangered species habitat are limited by both the lack of connectivity of this watercourse and the high degree of alteration of the channel and its banks. Upstream, the on-site watercourse discharges from an over 950 foot long culvert, while downstream it flows through the 150 foot long Old Kings Highway culvert. Additionally, the connection between the channel and the Goodwives River includes a steep armored drop limiting the movement of fish or other aquatic organisms upstream.

Due to the lack of natural space in and adjacent to this watercourse, it is not a significant source of food for organisms, and therefore does it provide production export functions. Naturally vegetated wetland banks can provide shoreline or sediment stabilization functions, but these functions are not present in this watercourse given the extent of armored bank stabilization.

The values of recreation, education/scientific, uniqueness/heritage and visual quality/aesthetics are all limited by the fact that the on-site watercourse is surrounded by parking lots and buildings.

Impact & Mitigation

The application proposes to culvert the open watercourse at this site. The impact will result in the loss of 360 linear feet of watercourse totaling approximately 1,080 square feet. As described above, the open channel fragment of this watercourse is limited in its ability to provide wetlands functions and values.

The replacement culvert will be designed to maintain the hydraulic capacity of the CTDOT-owned culverts above and below the open channel section.

The application proposes mitigation for the impacts that result from culverting the on-site watercourse by improving existing stormwater quantity and quality, primarily through proposed infiltration systems and a proposed water quality basin.

The project will provide stormwater treatment practices, such as underground infiltration chambers intended to improve the recharge of groundwater and reduce runoff through infiltration. Another stormwater treatment practice to improve water quality is a proposed basin to treat stormwater runoff from Old Kings Highway South. The proposed basin will be constructed in an upland area between Old Kings Highway South and the Goodwives River, and will be approximately 2,420 square feet with a storage volume of 5,590 cubic feet. The primary function of the basin will be water quality improvement, but it will also function to store stormwater runoff during storm events. The stored stormwater will be infiltrated such that the basin will empty in 72 hours. The basin is proposed to be planted with a native plant seed mix such as the New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites from New England Wetland Plants. This mix includes herbaceous species designed to withstand both short-term flooding and dryness because the basin water levels will be subject to fluctuation. The mix includes taller growing species including wool grass (*Scirpus cyperinus*) and Joe Pye Weed (*Eupatorium maculatum*) and is not designed to be mowed frequently. The vegetation can be mowed occasionally to exclude woody plants for the maintenance of the basin, ideally once a year in the late fall. A buffer of natural vegetation including trees and shrubs, will remain between the basin and Goodwives River. The taller vegetation and woody buffer will discourage the use of the basin by Canada geese. This water quality basin will be maintained by the applicant and discussion of the basin maintenance plan is included in the project drainage report.

Alternatives Assessment

In developing the site plan, the following alternatives were considered, and were deemed to have more impact than the site plan application set forth before the Commission:

No build. The “no-build” option would leave the watercourse in its current condition, with very limited and impaired functions and values because of the existing armoring and directly connected impervious coverage. The proximity of impervious cover and dumpsters gives the watercourse an opportunity to act as a conduit for trash and other debris to be transported directly the Goodwives River. The existing stormwater discharges are not treated with any stormwater treatment practices that meet current requirements. The proposed site plan offers an opportunity to disconnect impervious coverage and provide much needed water quality improvements while only impacting a highly channelized and functionally limited open channel segment of a culverted watercourse.

Maintaining / Relocating the Existing Channel. We also evaluated the possibility of maintaining or relocating the existing channel in lieu of the proposed culvert option. The goal of the proposed development, as well as a recommendation of the Plan of Conservation and Development is to create cohesive developments that encourage applicants to consider greater connectivity between the buildings and street, specifically moving first floor retail closer to the street line. Maintaining the watercourse in its current location impinges upon the ability to locate structures that can interface with the street lines while being of sufficient size to support their purpose. Furthermore, maintaining or relocating the channel does little to improve the quality of the watercourse, and its location in the center of the development block would make the public less likely to engage with it. The functioning of this section of open watercourse would remain limited by the existing culverted sections upstream and downstream of the open watercourse. The proposed development provides significant stormwater quality improvements, and helps the Town reach part of the Town-wide disconnection of impervious surface goal established in the MS4 General Permit.

I hope this letter has adequately described the conditions of the watercourse at this site and the proposed impact and mitigation associated with this application. We look forward to presenting and discussing the project at a Commission meeting.

Very truly yours,

TIGHE & BOND, INC.



Richard Canavan, PhD, PWS
Senior Environmental Scientist



Photo 1: View from northern limit of watercourse looking downstream (southeast, 1/13/2018).



Photo 2: Approximately 100 feet downstream of outlet, stormwater discharge in foreground left (1/13/18).



Photo 3: Looking upstream approximately 20 feet upstream of inlet to culvert (1/13/18).



Photo 4: Inlet to culvert which conveys channel under lawn and Old Kings Highway South (1/13/18).